Native Villages of Fishermen of Deep-Sea Tuna Long-Lining Boats in Northeastern Japan-Karakuwa Township on Sanriku Coast-

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——Karakuwa Township on Sanriku Coast——

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1 Outline of Karakuwa Township

In the north-eastern part of Honshu island, there is highly irregularly shaped shoreline running north to south about 400 km, produced by the submergence of the Kitakami Mountains which is one of the oldest land blocks in Japan. Offshore of this coast is one of the most productive fishery regions in the world, where various fish species and numerous fish are migrating seasonally in a warm current, *Kuroshio*, and in a cold one, *Oyashio*. This coastal region is commonly called Sanriku Coast ("Sanriku *Kaigan*" in Japanese). Some large base ports of deep-sea fishery, *e.g.* Hachinohe, Miyako, Kesen-numa, Ishinomaki and so on, are located there taking advantage of the deep water and the extensive inland shoreline. Mariculture is also developed in this region.

Karakuwa Township is located in the southern part of the Sanriku Coast (Fig. 1). Many inhabitants there have lived by making use of the marine resources from generations ago. Boat fishing developed much earlier than in other regions in Japan, because of the high productivity of coastal and offshore fish resources. The township was especially known as an advanced place of the skipjack pole and line fishing from the *Edo* era (1600-1868) to after the Second World War. Many groups of fishermen were engaged in this fishery. But since the early period of high economic growth of Japan, that is from the 1960's, tuna long-lining fishing which is a more productive type than the skipjack fishing, and which is the most important deep-sea fishery today in Japan (Table 1), rapidly developed. In the process of this change, many boat owners in Karakuwa have moved their base ports to Kesen-numa, the neighboring town west of the peninsula (Figs. 1 and 2), in quest of broader port yard and various service facilities for the fishery. Kesen-numa has rapidly developed into a large tuna base port, owing to this change. Thus, Karakuwa-Kesen-numa district has grown to be the most important place supplying the owners and the crews of fishing boat engaged in the deep-sea tuna fishery.

In this paper, the author will report on the present conditions of fishery and the

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Table 1 Catch in value by deep-sea fishery types in Japan

Type of deep-sea fishery	million ¥	(%)
Factory ship trawl	41,380	(4.9)
Factory ship salmon fishing	13,989	(1.6)
Distant-sea trawl	150,384	(17.7)
East china sea trawl	65,490	(7.7)
Purse seines	210,926	(24.8)
Tuna long-lining	271,274	(31.8)
Skipjack pole-lining	98,417	(11.6)
Total	851,860	(100.0)

Source: "*Suisan Nenkan*" (Fishery Yearbook of Japan) **1983/1984**

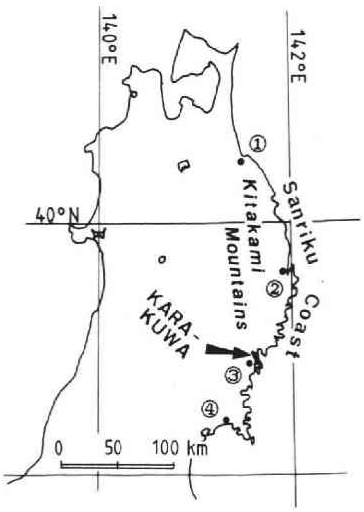

Fig. 1 Location of Sanriku Coast and Karakuwa Township.
Base ports of deep-sea fishery.
①: Hachinohe ②: Miyako
③: Kesen-numa ④: Ishinomaki.

fishing households in Karakuwa.

2 Some characteristics of primary industries and fishing households: findings from the Census Data

The area of Karakuwa Township is 42.6 km², a long and narrow district running from north to south. Most of the township is hilly landform with altitudes of about

50 m a.s.l and over, and low and flat surfaces are very few (Fig. 2). Thus, the lands suitable for cultivation are narrow. The proportion of cultivated land is only 5.2% (2.2 km²) of the area of the township. Average cultivated land under management per farming household is merely 0.27 ha (1980 World Census of Agriculture). It is far less

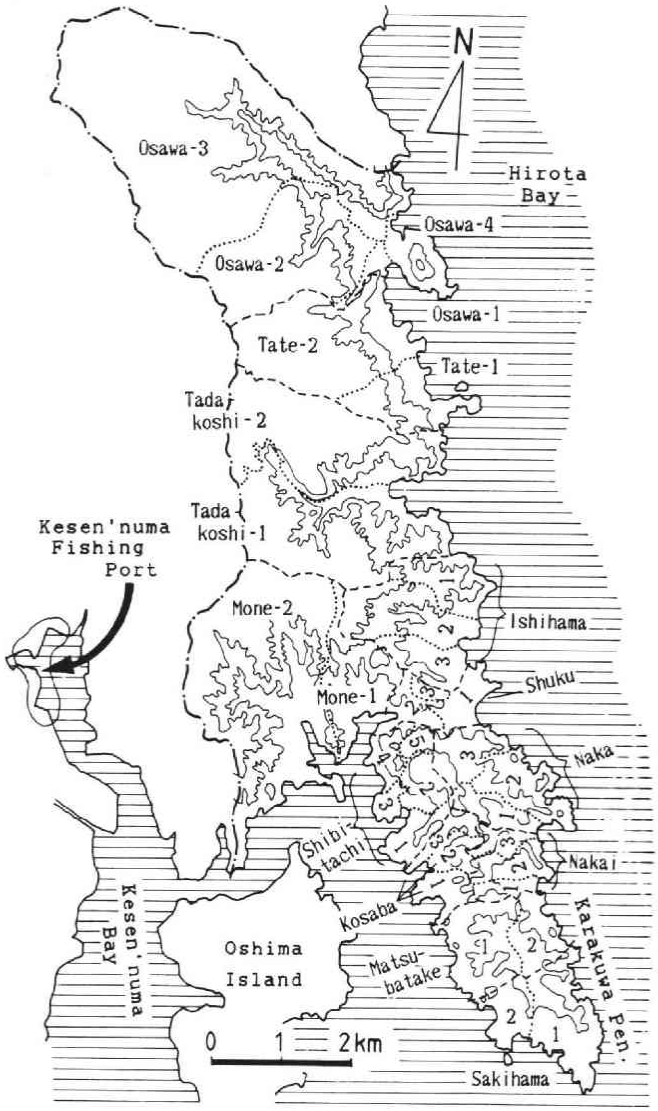

Fig. 2 Index map of Karakuwa Township.
Dotted line: boundary of administrative districts
Broken line: boundary of commonly divided sections
One dotted broken line: boundary of Karakuwa Township.

than the neighboring townships. Yet, the 1980 Net Domestic Product in the township was 8,786 million yen. About half (51.2%) of the N.D.P. is earned by primary industry, and fishery accounts for almost all amount (48.7% of N.D.P.) of it. Fishery is a very high value industry here, so the labor productivity (N.D.P. per gainful worker) is higher than that of neighboring regions or the prefecture.[1] Furthermore, the Karakuwa data do not include the wages earned by many fishing laborers employed by owners of tuna fishing boats whose base ports are outside the township area. From the above facts, it is clear that fishery is the main and most gainful industry in Karakuwa in contrast to the very small business of agriculture.

According to the Fishery Census of Japan, there were 355 fishing households in Karakuwa Township in 1983. This number was slightly reduced since 1978 (Table 2), but the households engaged exclusively or mainly in fishery increased a little (Table 3). Just over half of them (51%, 184 households) are mainly managing the mariculture of *wakame* (a species of seaweed) or oysters, and most of the others (164 households) carry on coastal fishing using the boats smaller than 20 ton as their main business (Table 4).

In many cases, members of these fishing households are also engaged in some side businesses. Although somewhat obsolete, the 1978 census reported the number of households by the types of side business in which members of the households were engaged during one year preceding the census day 1, 11, 1978 (Table 5). There are two major types of side business in fishing households, that is (a) farming and (b) working for others. The latter can be again divided into two types, *i.e.* (b1) wage working in fisheries and (b2) wage working in jobs other than fishery. Through the inspection of the relationship between self-employed fishing and these side jobs, the following characteristics are clarified concerning the division of labor in fishing households. That is, side work in farming (a) and non-fishing wage work (b2) are engaged in evenly by members of households which carry on fishing as their main business and side work as secondary. At the same time, the percentage of wage work in fisheries (b1) is much higher in the households that carry on their own fishing as a secondary business.

Table 2 Number of fishing establishments by types of ownership

	1978	1983
Company	2	2
Parthership	1	2
Household	376	155
Total	397	359

Source: *Fishery Census of Japan*

Table 3 Number of fishing households by extent of dependency on fishery

	1978	1983
Exclusively engaged in fishery	24	38
Mainly engaged in fishery	149	158
Partly engaged in fishery	203	159
Total	376	355

Source: *Fishery Census of Japan*

Table 4 Number of fishing establishments by types of fishery

Types of fishery	Number
Mariculture	184
Nori	0
Oyster	59
Wakame	125
Scallop	0
Boat fishing	164
Less than 1 ton	93
1- 5 ton	30
5- 20 ton	22
20- 50 ton	0
50-100 ton	7
100 ton and over	12
Set net	11
Total	359

Source: *Fishery Census of Japan,* **1983**

These facts suggest that farming and non-fishing wage works are the jobs of secondary workers in fishing households in Karakuwa, and, on the contrary, self-employment and wage employment in fisheries are the principle worker's jobs.

In 1983, the number of households with one or more wage workers in fisheries was 1,163. This is 53% of the total households (2,189: Oct., 1980) in Karakuwa township. Almost all of the wage workers in fisheries are the crew members on deep-sea tuna fishing boats.[2] In the fishermen's list of Karakuwa (Sept., 1980), there were 1, 650 boat employees accounting for 52% of the 18-59 years old males (3, 159 persons). Most of them are on the tuna boats whose base ports are on Kesen-numa. They are at sea almost all the year around.

Table 5 Number of fishing households by side-business by extent of dependency on fishery

Side-business	Mainly engaged in fishery	Partly engaged in fishery
Agriculture (a)	118	138
Fish processing	2	6
Leisure fishing or seasonal inn	7	11
Others	17	23
Wage work for fishery (b1)	47	156
Wage work for other than fishery (b2)	63	113
Total	149	203

Source: *Fishery Census of Japan*, 1978
Note: (a), (b1), (b2); See the text

Thus, generally speaking, it becomes obvious that the total income of fishing households in Karakuwa consists mainly of earnings from mariculture or employment in tuna fishing, and secondarily from farming and non-fishing wage work. Moreover, incidental earnings by shellfish collecting, permitted for members of fishery cooperatives about ten days a year, is added to this. Through these various sources of income, many of the dwellings of fishermen in Karakuwa are very large and splendid in comparison with ones of inhabitants of neighboring regions. They are widely known under the name of *Karakuwa Goten* (Karakuwa Mansion).

3 Distribution of tuna fishermen and mariculture households

The area of Karakuwa Township is commonly divided into twelve sections. Every section is divided into several administrative districts and totally into thirty four administrative districts (Fig. 2).

Fig. 3 indicates the population density in the twelve sections. The south part of the township, *i.e.* the peninsula part, shows a very high density, over 400 persons per square km. This part is called Karakuwa Peninsula, with an area of only about 10 km^2. How can people make a living in such a densely inhabitated narrow peninsula? Many of them make their living by fishing work on the deep-sea tuna boats. Fig. 4 indicates the number of tuna fishing employees per household by thirty four districts. The average of all the township (0.75 persons) is a good many number. The districts in the middle and south parts of the peninsula such as Nakai, Kosaba and Sakihama show from 0.9 to 1.0 fishermen per household and over. Especially, in the district of Sakihama-2, there are 103 households and 123 fishing employees, so the ratio is 1.2.

Fig. 5 represents the distribution of the maricultural area and households. The maricultural households are many in such districts as Shibitachi, Mone, Tate and

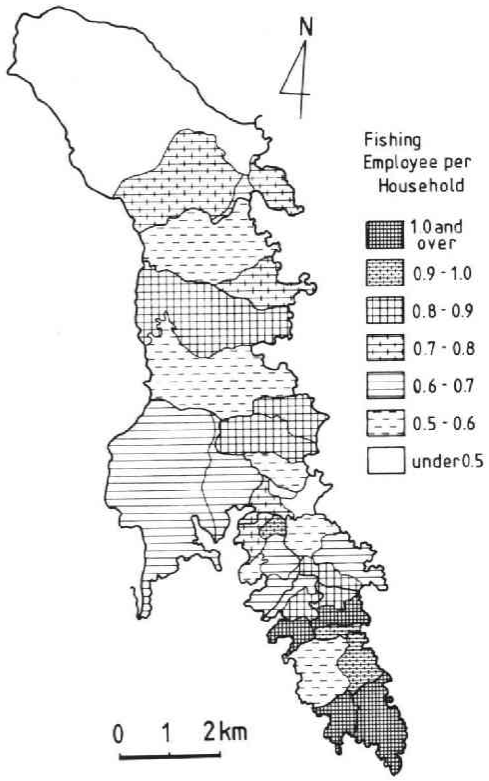

Fig. 3 Population density by twelve sections (person/km²).

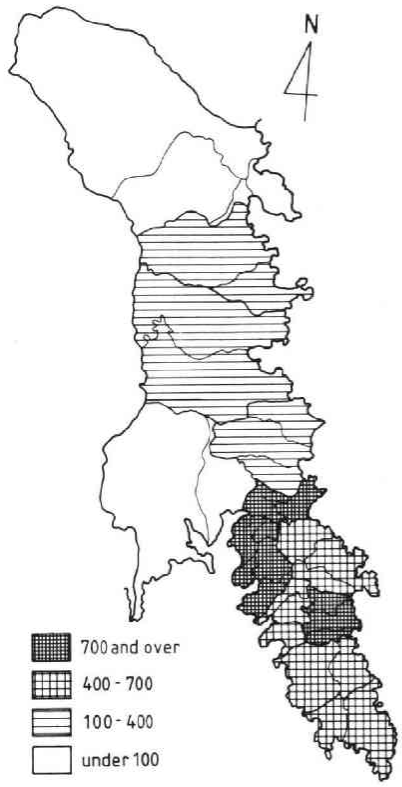

Fig. 4 Number of tuna fisherman per household by the districts

Ishihama which look out upon an inland sea, *i.e.* Kesen-numa Bay and Hirota Bay (Fig. 2). Generally speaking, maricultural households are concentrated in an area where tuna fishermen are few. The types of mariculture such as *wakame* and sea squirt are located along the side of the open sea, and *nori*, a species of laver, and oysters are located in the inland sea.

4 Two native villages of tuna fishermen

In this chapter, the author reports the family and occupational composition of two native villages, Sakihama-2 (commonly called Tsumoto) and Shibitachi-4 (Fujihama). The former is the district with the greatest number of tuna fishermen, and the latter is a place where not only tuna fishermen but also maricultural households are many. The field survey was carried out in August, 1981.

Table 6 Family and occupational composition of fishing household at Tsumoto (Sakihama-2)

No.	Family and occupational composition*				Farming**		Notes (income in 10^4¥)***
	Head	Wife	Eldest son	Others	Rice	Others	
1	57 A3	60 A1	37 B3	Son's wife : B4, son : B3		D	Eldest son : fishing crew chief (800),
2	66 A1,A2	60 A1	41 B3		B	C	A2 : set net management head : owner
3		63 A1	30 B3	Younger son : B3		C	of tuna fishing co.
4	58 B3	53	29 B3				B3 : fisherman (350)
5		50's A1	30's B3	Younger son : B3		C	
6	52 A3,A1	49 A1			B	A	Head : retired from B3, owner now
7	57 B3	50's A1	27 B3			C	
8	50's A3	50's A1	30 B3	Mother : A1	D	B	A3 : off-shore boat owner
9	49 B3	46 A1, B4	20's	Daughter : B4		C	Head : captain of tuna boat (300)
10	50 B3	45 A1	25 B3	Mother : Al, son : B3		B	Head : captain of tuna boat
11	69	69 B4	34 B3	Son's wife : B4			Head : retired from B3
12	56 A3	48 A1	20's			C	A3 : deep-sea boat owner
13	61	52	34 B3	Younger son : B3			Head : retired from B3 in 1977
14	35 A3	33 B4		Mother : A1		C	
15	47 B3	44 A1					
16	60	56 A1	30 B3	Son's wife : B4, sons : B3, B4,		B	Head : retired from B3 in 1974
17	50's A1	50's A1		Mother : A1 B4	A	C	Head : public official formerly
18	48 B3	43 A1	18 B3	Mother : A1		C	sea this year
19	68 A1	64 A1	39	Son's wife : B4, son : B3		B	Head : retired from B3, son : off the
20	35 A2	34 A1		Younger brother : A2		C	A2 : mariculture (800)
21	44 B3	40 A1				C	

Foot Note *Left side : age, Right side : occupation shown in simbols below.
A : own business B : wage labor.
1 : farming 2 : coastal fishery 3 : off-shore or deep-sea fishery 4 : others.
**Cultivated land under management ; A : 5a and over. B : 5-3a, C : 3-1a, D : less than 1a
***No. 20 : annual income, others : income per navigation.

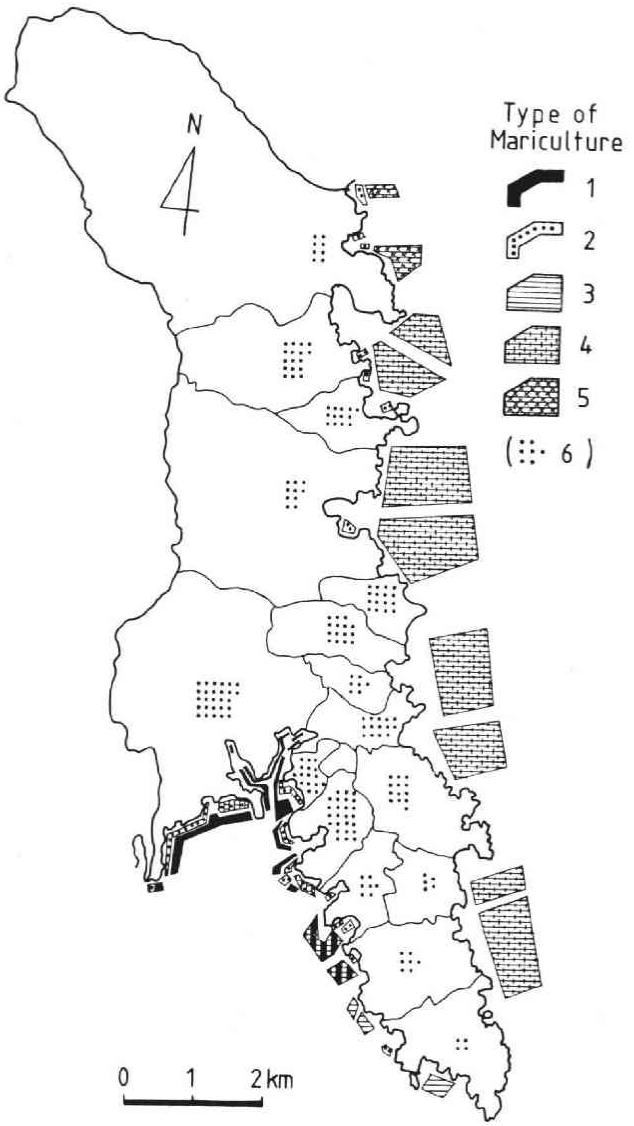

Fig. 5 Distribution of mariculture area and households.
Explanatory Note:
1. oyster 2. *nori* 3. *wakame* 4. sea squirt 5. scallop 6. one dot = one mariculture household.

4.1. Tsumoto (Sakihama-2)

The district of Tsumoto is located on the end of Karakuwa Peninsula (Fig. 2) and consists of 103 households. Table 6 provides the family and occupational composition

Table 7 Family and occupational composition of fisition of fishing household at Fujihama (Shibitachi-4)

No.	Family and occupational composition*				Own business		Notes (income in 10^4¥)****
	Head	Wife	Eldest son	Others	Cultivated land**	Mariculture***	
1	54 A2	40's A1	26 B3	Daughter: B4		O(10)	Head and his father: B3 formerly
2	61 B4	53	30 B3				Eldest son: captain
3	54 A2	50	24 B3	Younger sons: B3, B3		O(12)	Head: retired from B3 in 1958
4	55 A2	50's A1	28 B3		D	O(11), W(5)	Head: retired from B3 in 1975
5	62 A2	65 A2	30 B3		B	O(12)	B3: (270), mariculture: (300)
6	60's A2	50's A1	32 B3	Younger sons: B3, B4		O(13), W(?)	Head: retired from B3
7	57 A2	60 A2	25 B3		D	O(11)	Mariculture: (150)
8	72 A2	70 A1	42 A2	Son's wife: A1	C	O(16), W(10)	Mariculture: (520)
9	54 B3	49	(22 B4)···	·Eldest daughter			B3: (250)
10	53 B3	46	23 B4				
11	50 B3	49	16				Father: B3 formerly
12	58 A2	53 A1,A2	32 B3	Son's wdfe: A1	C	O(5),W(?)	
13	63 A2	52	33 B3			O(4)	B3: chief engineer (300)
14	67 A1, A2	66 A1	50 A1,A2	Grandson: B4	C	O(21)	
15	54 A2	50 A1,A2	27		C	O(15)	Mariculture: (350)
16	60 A1	60's A1	32 B2		D	O(5)	

Foot Note *, **See foot note of Table 6.
***Type of mariculture; O: oyster, W: *wakame*. ( ): number of culturing raft.
****B3: income per a navigation, others: annual income.

of twenty one households sampled at random, about one-fifth of the total. The symbols shown in each column of household members mean self-employment (A), wage work (B), farming (1), coastal fishery (2), off-shore and deep-sea fishery (3) and others (4). (A), (B) and (1), (2), (3) are represented in combination with each other. The symbol for an employee of a deep-sea fishery, *i.e.* the crew of tuna fishing boat, is shown as "B3".

It is obvious from the table that the average number of tuna wage workers per household is 1.24 (26 persons/21 households), which is somewhat greater than the number (1.19) reported in a 1980 survey by the township authority. But there are five households with no tuna fishery employee. In the case of these households, the main worker is engaged in the management of their own tuna fishery (No. 6, 12, 14) and farming or mariculture (No. 17, 20). These households have no heir who is of working age. In other households, the heads in their fifties or younger and their sons are in the tuna boats, the heads who are older than fifties and the housewives are engaged in farming, and other female workers are engaged in some non-fishing wage labor.

A voyage of a deep-sea tuna fishing boat spends eight or more months, sometimes one year, at sea. Crew members earn 3.5 million yen in the case of No. 4 eldest son who is a sailor, or 8.0 million yen in the case of No. 1. eldest son who is a fishing crew boss from one voyage. Since all expenses of food and living for the crew during a voyage are met by the boat's owner, the crew's earnings are more than enough for the livelihood of his family even in the case of the sailor.

4.2. Fujihama (Shibitachi-4)

Fujihama fronts on the narrow cove of Kesen-numa Bay (Fig. 2). There are thirty five mariculture households, thirty six tuna fishermen, and forty six households in total. Sixteen households, about one-third of the total, were surveyed, and the family and occupational compositions of them are shown in Table 7. Among them, thirteen are tuna fishermen's households and twelve are maricultural households which mainly manage oyster culture.

Oyster cultivation at Fujihama began in 1930, for the first time in Karakuwa township, by the father of the head of No. 1 household. The right for mariculture for all households was established during the 1950's. Non maricultural households (No. 9, 10, 11) are branch families newly set up after that. The occupations of household members commonly show that the household head who is fifty or sixty years old manages his own mariculture and the eldest son is on a tuna boat. Many of the household heads were also on tuna boats in their younger days.

The annual income in No. 5 household consists of 3.0 million yen from oyster cultivation mainly by the household head and 2.7 million yen from tuna boat labor by the eldest son. If the expense of maricultural materials are taken into consideration,

tuna labor is far more profitable. Therefore, every tuna fisherman hopes to take as many voyages as possible before the age of fifty five when he can receive a fisherman's monthly pension. But because they inherit the family's mariculture when their fathers can no longer manage, most fishermen retire from the tuna fishing boats before age fifty five. It can be said, therefore, that for the tuna fishermen, the family mariculture means being tied to a less profitable business on one hand, but a security for the livelihood of the family after his retirement from tuna fishing on the the other hand.

Acknowledgements

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Note

1) The labor productivities (N.D.P. per gainful worker) for Karakuwa Township, Motoyoshi County and Miyagi Prefecture are 3.32, 2.69 and 3.19 million yen respectively (*Miyagi-Ken Shichosonmin Shotoku Tokei* (Census of Income, Miyagi Prefecture, 1985). One million yen is about $ 5,000 (1985).
2) Payment for the work of tuna fishing boat consists of fixed salary and percentage contract named "bounty for increase of production" based on the catch of fish. The ratio of the former to the latter is about 1 : 2, and the sum of payments to all crew is about 30% of the total value of the catch. So, the payment for employees in tuna fishing boats does not precisely mean "wage".